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ABSTRACT

A teaching experience merging many collaboration strategies and e-learning activities is presented. It has taken place at the University of Lugano (Switzerland), and involved 33 undergraduate students attending the course "Advanced Enterprise Applications of Information and Communication Technologies" in the Faculty of Communication Sciences. The experience, a role-play, consisted in developing an online course on business models on the Web (a course freely available online), and showed how an hybrid approach can help integrate online activities and other academic teaching strategies. The results of this activity are discussed, as well as some ideas for future experiences. (Author)

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Computer Mediated Collaboration in an Academic Setting. An Experience on Web Business Models at the University of Lugano (Switzerland)

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Abstract. A teaching experience merging many collaboration strategies and e-learning activities is presented. It has taken place at the University of Lugano (Switzerland), and involved 33 undergraduate students attending the course "Advanced Enterprise Applications of Information and Communication Technologies" in the Faculty of Communication Sciences. The experience – actually, a role-play – consisted in developing an online course on business models on the web (a course freely available online), and showed how an hybrid approach can help integrate online activities and other academic teaching strategies. The results of this activity are discussed, as well as some ideas for future experiences.

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Setting the scene

The Lugano University (USI) was born in 1996 and is the most recent Swiss University and the only one in the Italian speaking part of Switzerland (Koenig 2001).
USI hosts a Faculty of Communication Sciences that offers four different curricula: Mass and new Media Communication, Corporate and Institutional Communication; Technologies for Communication and, since 2000, Communication in Educational Settings. While, at first, degrees were awarded after four years, the University has adopted the 3+2+3 model following the European Union standards (since the academic year 2001-2002). Students come from Switzerland, Italy, and many other countries; their mother tongues are mainly Italian, German, French and English, and courses are taught in Italian as well as in other languages.

This paper presents an experience done during the first semester of the academic year 2000-2001, with students of the fourth year (from the curricula Corporate and Institutional Communication and Technologies for Communication) attending a course called "Advanced Enterprise Applications of Information and Communication Technologies"[3].

Students were supposed to attend lectures and to work in small groups at different projects concerned with the course topic: 11 groups were involved in the project that is now to be presented.

The roles and the play

The exercise consisted in a role play: students pretended to be members of an international consulting agency (one of the top ten in its field), and had to build up an online course for their colleagues junior consultants, in order to make them aware of the many possibilities for (as well as constraints and shortcomings of) online business. Junior consultants attending the course had not to become experts in the field – the company already had those experts: namely all the people involved in the role-play – but only to become capable of understanding, when doing their consulting activity, if there was any room for online business.

The course had to be in Italian, for self study, and all the materials should be covered in not more than 24 hours (three working days). The platform for course delivery had to be WebCT[4], while all the

[1] Institute for Communication and Education and Doctoral School NewMinE: New Media in education – www.lu.unisi.ch/newmine.
[2] TEC lab: Technology Enhanced Communication Laboratory – www.lu.unisi.ch/tec-lab.
[3] The course was held by professor Paolo Paolini assisted by Lorenzo Cantoni, who designed and led the experience, and Davide Bolchini.
[4] WebCT Version 3.6 Standard Edition (www.webct.com, last visit: October 2001).

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involved groups had to collaborate also using the University's intranet and a tool for online discussions (WebBoard[5]).

Course developers were divided into three different types of groups: **a.** *management and reporting*: one group of three students, randomly chosen; **b.** *pedagogical design and technical implementation*: two groups of two students each, selected because they were more expert in the use of technologies and had previously attended a course on how to use the WebCT platform; **c.** *content development*: eight groups of three students (randomly chosen) were assigned a different business model according to a taxonomy of Internet business models proposed by Mike Rappa (2000): **1.** Brokerage, **2.** Advertising, **3.** Infomediary, **4.** Merchant, **5.** Manufacturer, **6.** Affiliate, **7.** Community, **8.** Subscription and Utility.

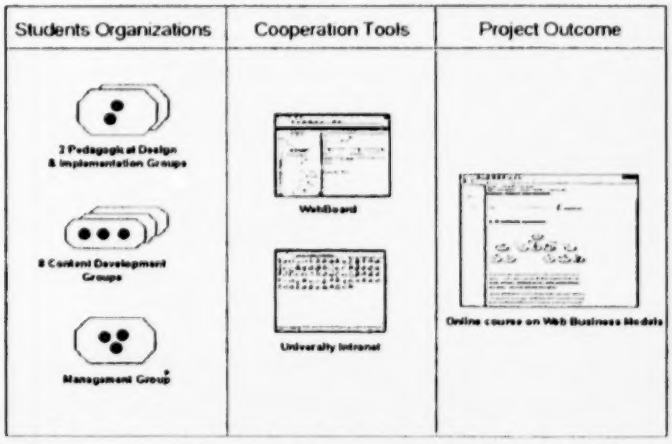

Figure 1: Synoptic of the role-play

Students were briefed during a lecture, they were also given a detailed printed timetable of the exercise, with all the group assignments[6]:

Group/week	week 1	week 2	week 3	week 4	week 5	week 6	week 7	week 8	week 9
Man. & reporting	start	reporting	reporting	reporting	reporting	reporting	reporting	reporting	reporting
ped. design & tech. implem. (1)	start		format guidelines		implementing	implementing	implementing	implementing	prototype
ped. design & tech. implem. (2)	start		format guidelines		implementing	implementing	implementing	implementing	prototype
Content dev. (1)	start			output 1		output 2		output 3	
Content dev. (2)	start			output 1		output 2		output 3	
Content dev. (3)	start			output 1		output 2		output 3	
Content dev. (4)	start			output 1		output 2		output 3	
Content dev. (5)	start			output 1		output 2		output 3	
Content dev. (6)	start			output 1		output 2		output 3	
Content dev. (7)	start			output 1		output 2		output 3	
Content dev. (8)	start			output 1		output 2		output 3	

Group a. was in charge of: supervising and monitoring all the other groups' activities, promoting them, reporting to the *role-play master*, being an interface between him and all the other groups, doing a weekly report of about 5 minutes during course's lectures, defining a suitable conference structure for online communication via WebBoard. The group had also to write a short introduction to the online module, in which the course and Business Models were defined and introduced. Group a. had periodical (usually once a week) meetings with the role-play master.

[5] WebBoard 4.2, Web Forums & Chat Software (www.chatspace.com/products/webboard/index.cfm, last visit: October 2001).

[6] The exercise started the 30th November 2000 and ended the 8th February 2001; only working weeks are considered in the table.

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Groups b. had to firstly define guidelines for all the content development groups on how to package the materials they had to prepare (e.g. document length, format and style), and to design, implement and test the prototype course.

Groups c. had first to research their specific topics (starting from Rappa's website and looking for relevant literature, both online and offline). Students were asked to perform their research as a kind of webquest (Clarke 1990; Dodge 2001), and select relevant references from the results. Moreover, groups c. had to write a suitable text explaining the features of the assigned business model (output 1). Groups c. had also to deliver a slide show to briefly present the subject, and to write two case studies of online applications implementing the business model (output 2); in addition to that they had to create a self-assessed test that could enable the learners to test their understanding of the contents covered by the module (output 3). All the three outputs were, in turn, input for groups b. All the materials had to be written taking into account that an average learner (a junior consultant, with an experience similar to that of the students) should cover every module in no more than three hours. Each content development group was introduced to the key features of the assigned business models by the *role-play master* in a kick-off meeting. The meeting allowed the group members to acquire the conceptual elements to interpret the large amount of literature available on the theme.

Rehearsing and performing

All the groups worked hard, and produced their output on time. Group a. organized – after some trials – 13 different online conferences on WebBoard: 11 devoted to every group, and used by its members for their internal communication as well as by the management group to post messages to the single groups. The remaining two conferences were titled "General" and "FAQ" and were used by group a. to give general instructions and information, and to sum up organisational topics of common interest. Except for the FAQ conference, with 5 messages, all the others got from 16 to 45 messages (mean value: 28). The number of messages posted on the WebBoard for each conference is shown in Figure 2. Groups b. and c. had to post and update a "state of the art" message on their own conferences, where they summarized weekly what they did *(acta)*, what they were going to do the following week *(agenda)*, and if they needed anything from group a. *(quaerenda)*. The weekly state of the art reported the essential information needed by the management team in order to have an overview on the state of the project and to coordinate and plan the work in parallel of the nine groups. As any of the groups failed to publish the state of the art (or it was too vague and generic), the managers posted a message in the group conference to eagerly solicit to deliver the expected report. People of groups c. interacted very well in each group, but did not show much interest in what the others were doing (anyway, they were informed regularly by group a.). Rich communication flows were established between group a. and all the others, and between groups b. and groups c. Figure 2 shows the number of messages posted within each conference on the WebBoard.

Many communication exchanges took place in the real world: students met almost every day in the university, but at the same time a lot of communication was also carried out via the WebBoard, sometime just summarising what was already said/discussed/decided in face to face communication exchanges (hence making group members sure that they all shared the same knowledge and the same decisions). Besides WebBoard, also email was used for coordination and communication among group members. For file exchanging the university intranet was used: so there were not any upload/download problem for groups b. that implemented and tested all the course.

The online modules showed that students had learned quite a lot, and were able to communicate their knowledge in a format suitable for an online course. Not all students delivered the same quality: some modules were better than others in terms of content accuracy, wording style and rhetoric effectiveness. However, the overall quality of the course was good.

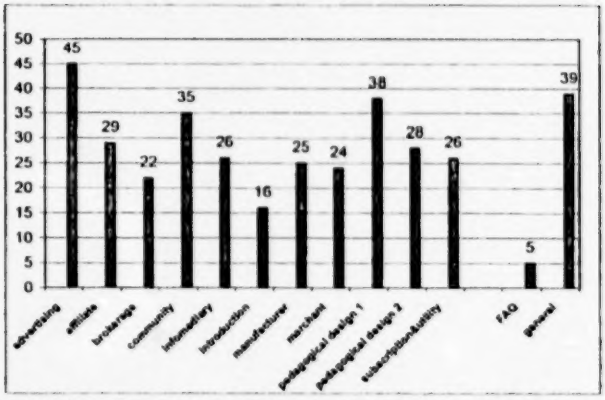

Figure 2: Number of messages posted on the WebBoard for each conference.

Due to the quality of the product, it has been later made freely available online at the following location: www.lu.unisi.ch/tec-lab/courseware.htm. The facility of having the module content both in textual form and in slide-style format turned out to be very fruitful. In fact, the course modules have been effectively reused later for other courses and workshops organized within the Faculty (about online business models and electronic commerce), which needed both slide presentations and text handouts.

The flexible structure of the module allows to learn a business model from different perspectives and according to different levels of depth: the text explains in details the roles and the relations defining an online business model (with its variants and sub-models) pointing out benefits and drawbacks; the case studies illustrated practical implementation of the model in a current web application; the slide show serves mainly for revision.

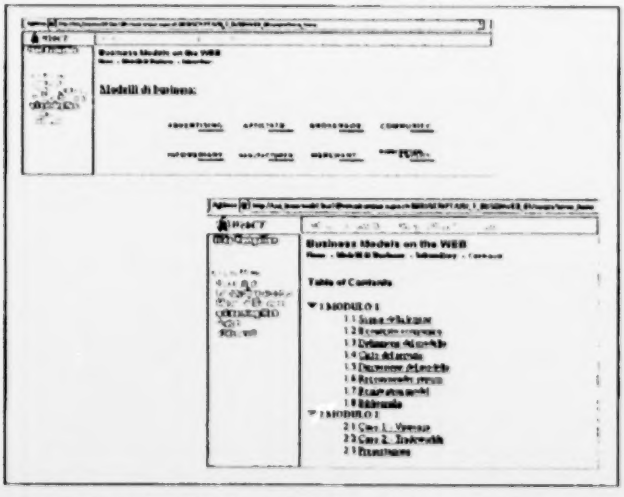

Figure 3: Each course module designed by the students is made by four components: the explanation of the business model, a set of references, two case studies and a slide presentation.

Pedagogical considerations and ideas for future experiences

The project allowed the students to learn about online business models by designing and creating an online course on that topic: this was a sort of *loop-input*, i.e. the actual correspondence between the content taught (advanced applications of ICT) and the way it was learned by the students (designing an e-learning activity). The main benefit of the described loop-input strategy is that students could live two kinds of experiences at the same time (collaborating in creating the online modules and learning about online

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business models), both strongly relevant to the core topics of the academic course. The two experiences are strongly correlated and support each other, enhancing the effectiveness of the overall learning experience.

Moreover, this experience helped combine a number of collaboration strategies and technology assisted learning activities: 1. *computer assisted collaboration* (communication exchanges between work groups mainly by means of WebBoard and University intranet); 2. *web-based distributed learning* (the online modules delivered); 3. *meetings and lectures* (between the role-play master and each work group; between work groups and the managers; between work groups and the design groups); 4. *webquests* (for searching the relevant material to be put in the references of the module); 5. *classroom discussions and presentations* (at the end of the project each group presented the work to their colleagues and the academic staff); 6. *a constructivist activity has been merged with academic teaching*, leaving to all "stakeholders" the possibility to contribute as much as they could to the common knowledge; 7. *e-learning activities have been integrated inside a more comprehensive framework*, and not isolated as sometimes happens when adopting the "Manichean" point of view: "face-to-face *vs.* online" (Rowley, Lujan & Dolence 1998; see also Cantoni & Paolini 2001); in particular, 8. also *a lively relation with the professor and the assistants took room as a milestone of the learning experience* (Dufeu 1994).

It could be argued that in a similar organization of the role-play – where the collaboration between groups of students is a necessary condition for the success of the project – the failure of one student group (e.g. no output delivered on time, no communication with other groups, no respect to the management guidelines) could cause the crash of the entire project. Actually, this was not the case: the project organization took into account this possibility. Even if any of the 8 groups of students responsible for the content development had failed, that would have not stopped the project, which would have still delivered a running online course (but with a module missing).

The problem would have been harder if the pedagogical-design and implementation groups had failed the job (other students with similar technological skills were difficult to find). In case of failure of the management group, that could have been replaced by the role-play master.

The robustness of the project organization was due to the fact that the content developers groups could work in parallel because the content modules had minimum or none overlapping.

One year after the end of the course, students who were involved in the project were asked to give their feedback through a simple questionnaire. Among the positive aspects of the project experience, students mentioned that they learned concepts underlying online business models; learned how to use a collaboration tool like WebBoard; combined in practice technology with education; learned how to define precise guidelines for content developers; performed a creative activity; lived a new class experience[7]. Moreover, students appreciated that the members of the management group were colleagues (peers) and not the professor/assistants. Respondents pointed out also weak points of the collaboration experience, such as the fact that some content development groups were not interested in the work of the other groups; on the other hand, intra-group collaboration was evaluated as very effective. Some students said that the time frame of the project was too long with respect to the final result delivered; others claimed that there was not enough time to complete an in-depth reflection and research for the content of the modules.

The questionnaire had seven main questions. Nine students filled in the questionnaire. Following charts (Figure 4 and Figure 5) show the marks expressed by each of the nine students for the two most relevant questions, the first about the perceived effectiveness of the collaboration within the group, and the second about the perceived learning outcome. The scale used was a five points scale measuring the level of agreement (1: *not at all*; 5: *at all*).

Question 1: *Was the collaboration within your group positive and useful?*

Question 2: *Do you think you got a useful insight in the theme of Web Business Models?*

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[7] For the majority of the students involved, it was the first time that they experienced such an innovative project in a class. Only some of the students had experienced something similar (at a smaller scale) at the WebAtelier of the Faculty of Communication Sciences (a web design lab led by Lorenzo Cantoni, www.webatelier.net). Each term, at the WebAtelier a half-dozen web applications are designed and produced by groups of three students. Clients are public and private companies in Switzerland and Italy. While the WebAtelier offers a lively and realistic working experience, the project presented in this paper has two important additional features: it allowed the students to learn about the content of the application (web business models) and to collaborate in a larger project (31 students instead of 3).

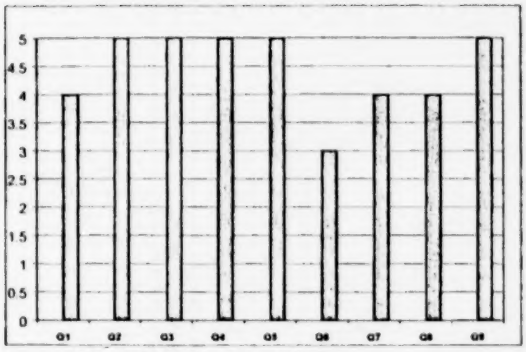

Figure 4: Marks for question 1

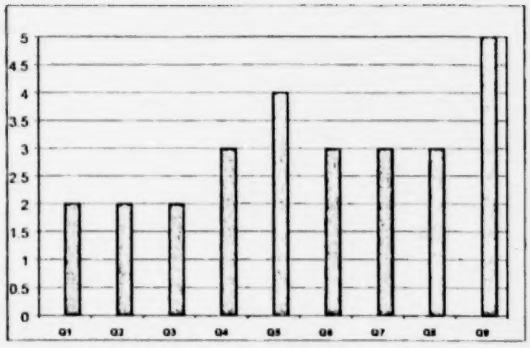

Figure 5: Marks for question 2

In the term starting in November 2002, we would like to perform a similar project. One of the lessons learned from this experience is to select properly the students and assign them to group according to their competence and management ability (instead of randomly). The learning outcome of the class could also be improved in the future by verifying that the pedagogical-design and development groups have enough time to learn the topic of the course, without being overwhelmed by the time-consuming implementation activities.

The project was exciting both for the students – who were committed to the responsibility of coordinating the work and learning the materials for delivering a complete running application – and for the teachers – who could see week after week the success of an innovative educational experience. The counterpart – on the teacher side – was the amount of effort required for the preparation of all the details of the activity (project schedule and possible breakdowns) and the monitoring of the project (managers – who represent the potential weak ring of the chain – had to be followed step by step).

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